

REMARKS

Claims 20 and 25-29 are currently pending in this application. Claims 1-19 and 21-24 have been canceled. New claims 27-29 have been added. Applicants have carefully reviewed the Office Action and respectfully request reconsideration of the claims in view of the remarks presented below.

Claim Rejections Under 35 U.S.C. §102

Claims 20-23 and 25-26 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 2002/0022867 (Akiyama).

Independent claim 20 recites, in part, an H-bridge including a first leg and a second leg, each leg including a pulse-width modulation switch and a polarity switch, and; a controller programmed to control a polarity control circuit to generate first and second polarity control signals whereby the polarity switch of the first leg is closed and the polarity switch of the second leg is open, and control a pulse-width modulation circuit to generate first and second pulse-width modulation control signals whereby the pulse width modulation switch of the first leg is open and the pulse width modulation switch of the second leg is closed, and the first capacitor is thereby electrically coupled across the second capacitor and the output in a first polarity; and while the first capacitor is electrically coupled across the second capacitor and the output in the first polarity, further control the pulse-width modulation circuit to generate pulse-width modulation control signals whereby the pulse width modulation switch of the second leg is toggled between open, whereby the first capacitor is electrically decoupled across the second capacitor and the output, and the second capacitor is electrically coupled across the output, and closed, whereby the first capacitor is coupled across the second capacitor and the output.

Akiyama discloses circuitry configurations including three switches. See figures 1 through 5. Akiyama does not disclose circuitry having four switches in an H-bridge arrangement. More specifically, Akiyama does not disclose an H-bridge including a first

leg and a second leg, each leg including a pulse-width modulation switch and a polarity switch, as recited in claim 20.

Akiyama discloses a circuit arrangement for delivering a positive phase of an output waveform. See figure 2. In this arrangement current flows from a capacitor 104 through an output. The resulting output is a truncated exponential waveform, as shown in figures 6(a) through 6(d). It is noted that during this positive phase, the capacitor 104 is never electrically coupled across the other capacitor 106, current instead is blocked by the diodes 108/109 and directed through the inductor 105. It is also noted that Akiyama does not teach or suggest any switching of switches 101, 102 and 103, during this positive polarity phase.

Akiyama also discloses circuit arrangements for delivering a negative phase of an output waveform. See figures 3(b) and 4. In these arrangements, current flows from an inductor 105 through an output, while also flowing into a capacitor 106 to charge the capacitor. See figure 4. Subsequently, upon closing switch 101, current flows from the capacitor through the output while the inductor is energized by the other capacitor 104. See figure 3(b). Again, as with the positive phase, it is noted that during this negative phase the capacitor 104 is never electrically coupled across the other capacitor 106. Specifically, in figure 3(b), the diode 108 is off so capacitor 104 is electrically decoupled from capacitor 106. See paragraph [0135]. In figure 4, switch 101 is opened so again capacitor 104 is electrically decoupled from capacitor 106.

In view of the foregoing, Applicants submit that Akiyama does not teach a circuit arrangement during which two capacitors are electrically coupled across each other, as recited in claim 20. Akiyama also does not teach toggling a switch at all during its positive phase; and the switch 101 that is opened and then closed during the negative phase, does not operate to electrically couple and electrically decouple capacitors. Thus, Akiyama does not teach, toggling a switch between open, whereby a first capacitor is electrically decoupled across a second capacitor and the output, and the second capacitor is electrically coupled across the output, and closed, whereby the first capacitor is electrically coupled across the second capacitor and the output, as recited

in claim 20. Accordingly, Applicants request reconsideration of the §102 rejections of claim 20 and dependent claims 25 and 26.

Claim Rejections Under 35 U.S.C. §103

Claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over Akiyama. Claim 24 has been canceled.

New Claims 27-29

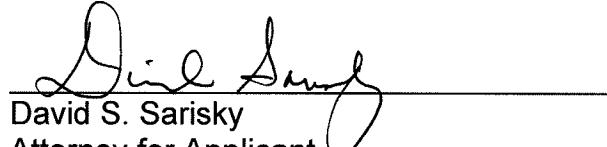
New claims 27 and 28 recite further features of pulse width modulation control signals. New claim 29 recites features related to circuit operation during a second polarity that is different from the first polarity of claim 20. The prior art of record does not disclose the features of these claims.

CONCLUSION

Applicants have made an earnest and bona fide effort to clarify the issues before the Examiner and to place this case in condition for allowance. Therefore, allowance of Applicants' claims 20 and 25-29 is believed to be in order.

Respectfully submitted,

20 JUN 2008
Date



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